this maxim somewhere along the way, for his book is neither comprehensive nor always intelligible.

Obviously there is a very difficult selection problem that must be dealt with here, and an author should not be unduly castigated for sins of omission, immense as these may be. He should, however, be held somewhat accountable for what he chooses to include in such a survey, and in this particular case the selection criteria often seem to be out of step with the mainstream developments in mathematics. A large amount of space is devoted to philosophical or quasi-mathematical contributions made by figures like Alfred North Whitehead and Bertrand Russell. Thus the section on "Theories of Distance" contains lengthy accounts of a number of obscure ideas that never seem to have made a ripple in the great sea of modern mathematics. At the same time, the influence of the Bourbaki tradition is confined to a tiny paragraph on the penultimate page of the book. The "philosophical" remarks in the introduction and conclusion contain little that is substantive, and, in general, tend to blur the distinction between *philosophizing* about mathematics (in the spirit of Whitehead and Russell) and actually *doing* mathematics.

Besides giving too much space to unimportant topics, the author overemphasizes early developments that are familiar to nearly everyone with a nodding acquaintance with the history of mathematics. The eight pages devoted to integration theory prior to Lebesgue could easily have been reduced to two. Finally, from a technical standpoint, this volume leaves a great deal to be desired. There are faulty references, misspellings (H. A. Schwarz appears as Schwartz throughout), imprecise definitions (e.g., *manifold* on pp. 66–67), and a *very* inaccurate name index. Moreover, the historical literature (Kline, Hawkins, Grattan-Guinness *et al.*) is virtually ignored. From all this one can only conclude that, whatever merits it may have as a summary of developments in modern analysis, this was definitely not the book Dirk Struik had in mind.

**Great Moments in Mathematics (before 1650).** By Howard Eves. Dolciani Mathematical Expositions No. 5. Washington, D.C. (The Mathematical Association of America). 1980. xiv + 270 pp. \$22 hardcover; \$13 paperback.

**Great Moments in Mathematics (after 1650).** By Howard Eves. Dolciani Mathematical Expositions No. 7. Washington, D.C. (The Mathematical Association of America). 1981. xii + 263 pp. \$23.50 hardcover; \$13 paperback; \$22 for the 2-volume set, paperback.

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The volumes in the Dolciani Mathematical Expositions series, we are told, are chosen for "their lucid expository style and stimulating mathematical content." Aimed primarily at an undergraduate audience, they are also meant to be of interest to the high school student as well as the mathematician (No. 5, p.v.). Eves' two books fit the series' criteria very well. They are eminently clear and readable, and tightly focused on 43 great moments in mathematics (a final chapter briefly reviews another 20). Each chapter consists of a discussion of, usually, one but sometimes two great moments, along with a section containing many mathematical exercises related to the chapter's subject. Eves has evenly distributed the great moments over the history of mathematics. In addition, he has maintained a good balance between technical detail and elements of mathematical folklore; there are only a few exceptions (e.g., moments 9 and 31). Among the great moments Eves deals with are: counting, the Pythagorean theorem, Euclid's *Elements*, Diophantus' *Arithmetica*, the algebraic solution of cubic and quartic equations, analytic geometry, mathematical probability, Fourier series, Hamilton's quaternions, set theory, metamathematics, and the resolution of the four-color conjecture. Overall, and in terms of both coverage and execution, the two books constitute a fine introduction to a significant range of basic mathematical concepts.

The contents of the two volumes are derived from a lecture series on great moments in mathematics that Eves developed some time ago to reach "anyone interested in learning something about the outstanding achievements in mathematics over the ages" (No. 5, p. ix). Much of the subject matter and many of the exercises of the lecture series were incorporated into his *An Introduction to the History of Mathematics* (4th ed., 1976) and his and Carroll V. Newsom's *An Introduction to the Foundations and Fundamental Concepts of Mathematics* (1958) (see No. 5, p. xi). Since the three works share a common origin, it is not surprising to find many similarities among them. Many of the sentences or phrases, the development of themes, and the exercises in all three are identical or closely paraphrased. *Foundations and Fundamental Concepts* has much more technical detail and a greater number of exercises than *Great Moments*; the *History*, on the other hand, has a broader coverage. However, there are a few updates in *Great Moments:* The most notable is a discussion of the Appel–Haken solution of the four-color conjecture (No. 7, pp. 216–218). Given Eves' intended audience and his blend of mathematical concepts, exercises, history, and anecdote, I believe he has done well to return his subject matter to its original "great moments" format. I much prefer these two volumes, as a general introduction to mathematics, over either the *History* or the *Foundations and Fundamental Concepts*.

The two books under review are not, and were not intended to be, histories of mathematics. However, their contents suggest that Eves believes that the presentation of mathematics in a historical context has some value. Unfortunately (from this reviewer's point of view), the function of history in Eves' works is merely to facilitate the communication of mathematical ideas in an entertaining way. Despite his statement that "a genuine understanding of ideas is not possible without an analysis of origins" (No. 7, p. 63), there is very little use of history to illuminate concepts or to discuss the nature of mathematics—the few exceptions are the discussions of the contributions of the Greeks to the idea of mathematical proof and the origins of the axiomatic method (No. 5, pp. 17–18, and 66, respectively). An indicator of the superficial role of history in this presentation is that all of the exercises are strictly mathematical. Eves' history consists of names, dates, facts, and anecdotes. These trivia are mostly correct—although I would not go so far as to state that the Greeks discovered "irrational numbers" and that Kepler deduced his laws from Brahe's data, nor describe Pascal as a religious neurotic, nor suggest that Hamilton was not interested in "mysticism" in mathematics (No. 5, pp. 45, 198; No. 7, pp. 5, 100, respectively). Eves' use of history does much for making his presentation enjoyable, but very little for any deeper understanding of mathematics. Indeed, the impression the volumes give is the traditional one of mathematics growing in a Platonic way, of ideas begetting other ideas aided by genius midwives. Notwithstanding the many good features of these two volumes, they do not meet the need for an introduction to mathematics aimed at the general public. The principal objective of such a volume would be to integrate the key ideas of mathematics and the insights into the nature of mathematics provided by history and other disciplines of the humanities and social sciences.